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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,852	10/17/2001	David Merricks	50550	7975

7590 09/09/2002  
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EXAMINER

NGUYEN, HA T

ART UNIT PAPER NUMBER

2812

DATE MAILED: 09/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/981,852

Applicant(s)

MERRICKS ET AL.

Examiner

Ha T. Nguyen

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371<sup>©</sup> of this title before the invention thereof by the applicant for patent.

2. Claims 1, 2, 4, 6, 7, 9, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by (Mahapatra et al. ( U. S. Patent 6301399, hereinafter "Mahapatra").

[Claims 1, 6, and 11] Referring to Figs. 3a-3e, 10 and related text, Mahapatra discloses a method (and article produced) of manufacturing an electronic device comprising the step of contacting a metal seed layer 8 disposed on a substrate 2 with an alkaline copper electroplating bath comprising copper pyrophosphate, the substrate containing one or more apertures ( see col. 4, line 21- col. 6, line 47), the seed layer is inherently enhanced by the overlying electroplated copper layer;

[Claims 2 and 7] wherein the electroplating bath has a pH of from 8 to 9 (see col. 6, lines 29-35); and

[Claims 4 and 9] wherein the electroplating bath further comprises one or more bases selected from ammonium hydroxide of tetra(C1-C4)alkylammonium hydroxide (see col. 6, lines 29-35).

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103<sup>®</sup> and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahapatra in view of Zhu et al. (U.S. Patent 6402592, hereinafter "Zhu").

Mahapatra discloses substantially the limitations of claims 3 and 8, as shown above.

But it does not disclose expressly the use of a complexing agent in the electroplating bath.

However, the missing limitation is well known in the art because Zhu discloses this feature (See col. 5, lines 7-10).

A person of ordinary skill is motivated to modify Mahapatra with Zhu to obtain desired plated film characteristics.

Therefore, it would have been obvious to combine Mahapatra with Zhu to obtain the invention as specified in claims 3 and 8.

5. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahapatra in view of Kaneko et al. (U.S. Patent 6416571, hereinafter "Kaneko").

Mahapatra discloses substantially the limitations of claims 5 and 10, as shown above.

But it does not disclose expressly the use of a brightener and its amount in the electroplating bath.

However, the missing limitations are well known in the art because Kaneko discloses these features (See col. 4, lines 36-42).

A person of ordinary skill is motivated to modify Mahapatra with Kaneko to obtain desired plated film characteristics.

Therefore, it would have been obvious to combine Mahapatra with Kaneko to obtain the invention as specified in claims 5 and 10.

6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen (U.S. Patent 6136707) in view of Mahapatra.

Cohen discloses a method for removing excess material from a semiconductor wafer containing one or more aperture by using a chemical mechanical planarization process to remove the excess material from the semiconductor wafer; wherein the apertures contain a seed layer deposit covered by an electroplated copper layer (See col. 6, lines 25-44), the seed layer is inherently enhanced by the overlying electroplated copper layer.

But it does not disclose expressly that the electroplating bath is an alkaline electroplating composition that comprises copper pyrophosphate.

However, the missing limitations are well known in the art because Mahapatra discloses this feature (See col. 6, lines 20-30).

A person of ordinary skill is motivated to modify Cohen with Mahapatra to obtain plated copper film of desirable characteristics.

Therefore, it would have been obvious to combine Cohen with Mahapatra to obtain the invention as specified in claims 12 and 13.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ha Nguyen whose telephone number is (703)308-2706. The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM, except the first Friday of each bi-week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached on (703) 308-3325. The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

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Ha Nguyen

Primary Examiner

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